Abstract

Diabetes mellitus has been considered as one of the major health concerns all around the world today. The newest tainted food supply concern is that flour in commonly consumed baked goods is being bleached with chloride oxide that produces alloxan as a byproduct, leading to toxic effect on Beta cells of the pancreas. This causes an insulin-dependent diabetes mellitus also called as "Alloxan Diabetes". Alloxan is a well-known and universally used agent for evoking experimental insulin dependent diabetes through its toxic effect on the Beta cells of the pancreas.. Medical science has discovered how sensitive the insulin receptor sites are to chemical poisoning. This paper presents a brief overview on the entry of alloxan into foods and its fatal link to diabetes.

Keywords: Alloxan, diabetes, Beta cells, consumed baked goods, Alloxan Diabetes etc

Introduction

Maida or refine wheat flour is the “heart” of the ingredients in making of the multivarious baked goods globally. It is also the primary raw material used in the preparation of a variety of lip smacking Indian breads such as naan and parotta. Alloxan is an oxygenated pyrimidine derivative which is present as alloxan hydrate in aqueous solution. Alloxan was discovered by von Liebig and Wohler in 1828 and has been regarded as one of the oldest named organic compounds that exist. It is a toxic glucose analogue, which selectively destroys insulin-producing cells in the pancreas, when administered to rodents and many other animal species. This causes an insulin-dependent diabetes mellitus (called "Alloxan Diabetes") in these animals, with
characteristics similar to type 1 diabetes in humans.

![Figure 1: Alloxan](image1)

Alloxan-induced diabetes has been commonly employed as an experimental model of insulin dependent diabetes mellitus [2]. Furthermore, the dose of alloxan required for inducing diabetes depends on the animal species, route of administration and nutritional status [3].

2. Chemical Cause of Diabetes

Chemicals suspected of increasing weight gain and diabetes in humans include a variety of components in food and consumer products. They have the ability to disrupt natural hormones which control both fat storage and sugar regulation, and hence can play a role in obesity and diabetes. Scientists have known of the alloxan-diabetes connection for years; in fact, researchers who are studying diabetes commonly use the chemical to induce the disorder in lab animals. In the research sense, giving alloxan to an animal is similar to injecting that animal with a deadly virus, as both alloxan and the virus are being used specifically to cause illness. Diabetes mellitus occurs when the pancreas doesn't make enough or any of the hormone insulin, or when the insulin produced doesn't work effectively. In diabetes, this causes the level of glucose in the blood to be too high.

![Figure 2: Cause of diabetes](image2)
In Type 1 diabetes the cells in the pancreas that make insulin are destroyed, causing a severe lack of insulin. This is thought to be the result of the body attacking and destroying its own cells in the pancreas - known as an autoimmune reaction.

3. Alloxan entry in to foods

It is generally understood that refining food destroy nutrients. 'Maida' is a finely milled and refined flour of wheat, made from the endosperm (the starchy white part) of the grain, while the fibrous bran and germ are removed in the mill [4]. It is used extensively in making Indian fast food and Indian bakery products such as pastries and bread and sometimes in making traditional Indian breads such as parotta and naan.

Figure 3: Traditional Indian bread (Paratha) made from tainted wheat flour

Chemicals can be helpful but sometimes what makes white flour look “clean” can also make it dangerous. [5] Most white flour used to produce bread and bakery goods is bleached in order to make the flour as white as possible.

Figure 4: Bakery products

There are several chemical bleaching agents that are used such as oxide of nitrogen, chlorine, chloride, nitrosyl, and benzoyl peroxide mixed with various chemical salts. But the most prominent flour bleaching agent by far is chloride oxide. When chloride oxide combines with what proteins are left in the flour after removal of the bran and germ of the wheat, it forms a substance called alloxan [5].
4. How does alloxan cause diabetes

Consumers of baked goods are unaware of alloxan and its potentially fatal link to diabetes.

It becomes the urgent need of the hour to create an awareness of his chemical component that could trigger the onset of the silent disease, diabetes.

6. Food for thought

Most fast food products are made from white flour that contains deadly toxic chemicals. This has been discussed widely in developed countries and right-thinking doctors and health officials have been warning the general public about the dangers that will take place due to consumption of white flour products.

The market experts and economic pundits will have many solutions with them to cure diabetics or it related diseases, but is for us to decide and practice what to eat and how to live.

The Textbook of Natural Medicine calls alloxan a "potent beta cell toxin." It is unfortunate that the FDA still allows companies to use it to process foods we eat. Research also shows that we are able to reverse the effects of alloxan with vitamin E.

- Gabriel Cousens, There Is a Cure for Diabetes: The Tree of Life 21-Day+ Program

"Recently, researchers decided to see what would happen if they gave the animals fish oil before receiving the diabetes-inducing drug alloxan. They discovered that the fish oils prevented chemically induced type 1 diabetes."

- Michael T. Murray, Beat Diabetes Naturally: The Best Foods, Herbs, Supplements, and Lifestyle Strategies to Optimize Your Diabetes Care

After bleaching with alloxan, white flour often has dough conditioners added that reduce the need for kneading. This fake food, with little or negative nutritional value, is an integral part of more than 90 percent of the baked products sold.

- Dianne Onstad, Whole Foods Companion: A Guide For Adventurous Cooks, Curious Shoppers, and lovers of natural foods

6. Outlook

The incidence of diabetes mellitus is increasing worldwide. Every day, consumers ingest foods made with alloxan-contaminated flour. Alloxan may be one of the leading causes of diabetes, the emerging disease of modern life style.

This is similar to the connection between high-cholesterol foods and heart disease. Eating high-cholesterol foods causes heart disease [6]. The link between alloxan and diabetes is as clear and solid as the link between cholesterol and heart disease. Research involving randomized control trial is needed in this regard to prove that Maida can cause Diabetes. These characteristics combine to result in a negative synergy that has precipitated diabetes at pandemic levels.
References


